

## Short and Long Range Solutions

Wireless Technologies.



## Wireless Technology portfolio

Rutronik has recently established its Wireless Competence Centre, based in Sweden, to consolidate Paneuropean support for wireless customers to include both commercial and technical support, application development and development tools. We can offer a wide range of both short and long distance wireless solutions from world leading suppliers.

Together with the wireless core products Rutronik can also offer a comprehensive range of accessories like antennas, SIM card holders, system connectors and adaptor cables.



## Our main suppliers

	CEP	Fastrax	FREE2MOVE	HIRSCHMANN A Rohde & Schwarz Company	Infineon	MICROCHIP	NORDIC Semiconductor	SAMSUNG ELECTRONICS	ST	Telit	Tyco Electronics	VISHAY	Others
RFID													
ISM/SRD													
ZigBee													
Bluetooth													
WLAN													
GSM													
GPS													
Accessories													

Please note, there are limitations for franchised product lines in some European countries.  
For more information, please contact our sales team.

## RFID



### Passive RFID Reader ICs

#### CR14/CR1X14 – Low Cost ISO14443 type-B Contactless Coupler Chip with Anti-Collision and CRC Management

- Single 5 V  $\pm$ 500 mV Supply Voltage
- SO16N package
- I<sup>2</sup>C Communication
  - Two Wire I<sup>2</sup>C Serial Interface
  - Supports 400 kHz Protocol
  - 3 Chip Enable Pins
  - Up to 8 CR14 Connected on the Same Bus
- Contactless Communication
  - ISO14443 type-B protocol
  - 13.56 MHz Carrier Frequency using an External Oscillator
  - 106 Kbit/s Data Rate
  - 36 Byte Input/Output Frame Register
  - Supports Frame Answer with/without SOF/EOF
  - CRC Generation and Check
  - Autom. ST Anti-Collision Exchange



### DEMOKITCRX14

This DEMOKIT is an easy to use hardware and software bundle to test different reader-chips and different tags. The kit contains all datasheets, application notes, two test boards with integrated antennas and a big choice of inlays with different mechanical-sizes and different memory-sizes. Use the contained software to program the inlays by your own and test the range of functionality.

### Passive RFID Transponder ICs and Inlays

		Package discription			
Product	Working distance	Size	Package type	Codification	
LR164 LRI2K	0 – 100 cm	45 x 75 mm	Copper antenna	A1	
SR1X4K SR1X512	0 – 20 cm	38 x 38 mm	Copper antenna	A3	
SR176 SR1X4k SR1X512	0 – 20 cm	15 x 15 mm	Copper antenna	A4	
SR176 SR1X4k SR1X512	0 – 20 cm	42 x 65 mm	Copper antenna	A5	
LRI512 LRI64 LRI2K	0 – 100 cm	ø 35 mm	Copper antenna	A6	
LRI64 LRI2K	0 – 100 cm	20 x 40 mm	Copper antenna	A7	
LRI512 LRI64	0 – 100 cm	28 x 28 mm	Golden Copper Module	C40	
XRA00 WRAG2	1 – 10 m		Wafer		

13,56 MHz (HF, ISO 14443b, ISO 15693) and 900 MHz (UHF, EPCglobal) standard transponders

SR = Short Range (ISO 14443), LR = Long Range (ISO 15693), XR = eXtended Range (ePCglobal) 900 MHz band

## RFID



### Active RFID

- Operates in the 2.4 GHz ISM band
- Tag with controller, RF transceiver and battery
- Addresses up to 200 tags per second
- Unique ID for each tag + 20 characters editable
- Up to 50 m range, all directions, with standard antenna
- Tag battery life time up to several years
- Communicates via RS232, RS422, Bluetooth, LAN, WLAN
- Tag available with temperature sensor (optional)
- Customizing of tags possible
- Start kit available

## ISM/SRD



### RFW3M / RFW8M

- High Data rate – up to 3 Mbps/8 Mbps
- Frequency agility – supports 7/5 different operating channels, each channel utilizes DSSS with a unique spreading code
- Operating frequency: 2.4 GHz – world-wide unlicensed band

### RFW3M-PA

- Designed for extended range wireless communication in the 2.4 GHz – world-wide license free ISM band
- High Data rate – up to 3 Mbps
- Frequency agility – supports 5 different operating channels, each channel utilizes DSSS, with a unique spreading code

### RFW122-M

- Ultra low power RF transceiver
- Operating frequency: 2.4 GHz – world-wide unlicensed band
- Data rate – up to 1Mb per second

### RFW122-M-PA

- Enhanced range RF transceiver – up to 40 meters indoors communication range
- Operating frequency: 2.4 GHz – world-wide unlicensed band
- Data rate – up to 1Mb per second

### RFW-D100

- Simple to operate link manager
- Provides parallel interface to the MCU
- Input/output FIFO's

### RFW-NC

- Designed especially for low end applications – ultra low cost, easy & convenient integration into applications, small outline
- Data rate of up to 1 Mbps
- Frequency agility – supports 5 different operating channels
- Operating frequency: 2.4GHz - world wide unlicensed band

## ISM/SRD



### Few external components gives low system cost and small size

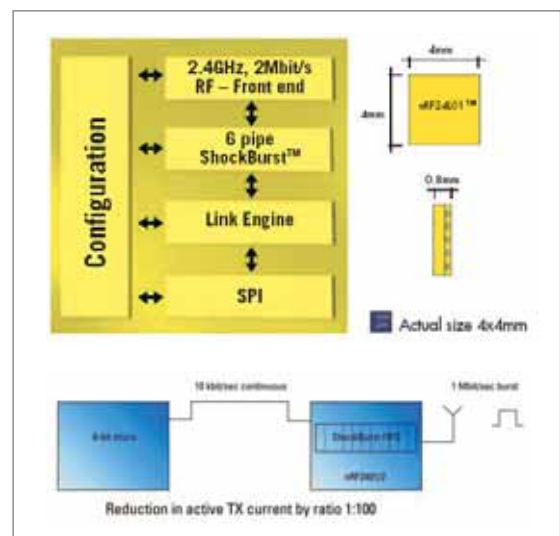
- Made for high volume production
- FSK or GFSK modulation for efficient and reliable communication
- Low voltage operation and extensive power down features

Part number	Description	Package	Physical peripherals
nRF24L01	2.4GHz Transceiver	QFN20 (4x4mm)	Enhanced ShockBurst, MultiCeiver, Link Layer Protocol.
nRF24AP1	2.4GHz Transceiver with protocol	QFN24 (5x5mm)	Embedded ANT protocol for personal area networks (PAN), UART or Synch serial port
nRF24Z1	2.4GHz audio streaming Transceiver	QFN36 (6x6mm)	I2S, S/PDIF, SPI, QoS engine, 4Mbit/s transceiver
nRF9E5	433/868/915MHz Transceiver	QFN32 (5x5mm)	8051 4 ch ADC, ShockBurst, voltage regulators
nRF905	433/868/915MHz Transceiver	QFN32 (5x5mm)	ShockBurst, voltage regulators
nRF24E1G	2.4 GHz Transceiver	QFN36 (6x6mm)	8051MCU, 9 ch ADC, PWM, ShockBurst, Duoceiver, voltage regulators
nRF24E2G	2.4 GHz Transmitter	QFN36 (6x6mm)	8051MCU, 9 ch ADC, PWM, ShockBurst, Duoceiver, voltage regulators
nRF2402G	2.4GHz Transmitter	QFN16 (4x4mm)	ShockBurst
nRF2401AG	2.4GHz Transceiver	QFN24 (5x5mm)	ShockBurst, Duoceiver



### Development Tools

For each part are Evaluation Kit's available. In all Kit's is a full functional system included, so you are able to build at minimum a point to point wireless Link.



Partnumber	Description
nRF24L01-EVKIT	2x carrierboards + 3 nRF24L01 (2 PCB + 1 SMA) modules + 2MCU modules w/USB+CD
nRF24L01-MODULE-PCB	1x nRF24L01 module with PCB antenna
nRF24L01-MODULE-SMA	1x nRF24L01 module with SMA connector
nRF24AP1-EVKIT	2x carrierboards +4x nRF24AP1 modules. + SW
nRF24Z1-EVKIT	2x nRF24Z1 boards + USB config boards + SW + antennas
nRF9E5-EVKIT-433	2x nRF9E5 boards + 2x USB config boards + SW + antenna for 433MHz operation
nRF9E5-EVKIT-868/915	2x nRF9E5 boards + 2x USB config boards + SW + 2 antennas for 868/915MHz operation
nRF905-EVKIT-433	2x nRF905 boards + 2 USB boards + 2 antennas + SW for 433MHz operation
nRF905-EVKIT-868/915	2x nRF905 boards + 2 USB boards + 2 antennas + SW for 868/915MHz operation
nRF24E1-EVKIT	2x nRF24E1 boards + 2x USB config boards + SW + 2 antennas

## ISM/SRD



Function	Part number	Frequency (MHz)	P out (dBm)	Data rate (kbps)	Supply voltage (V)	Temperature (°C)	Other features
Transmitter	TDK5100	433–435/868–870	5/2	20	2.1...4.0	–40...+125	Low power
	TDK5100F	433–435	5	20	2.1...4.0	–40...+125	10 pin
	TDK5110	433–435	10	20	2.1...4.0	–40...+125	Low power
	TDK5110F	433–435	10	20	2.1...4.0	–40...+125	10 pin
Receiver	TDK5116F <b>NEW</b>	866–870 MHz	10	20	2.1...4.0	–40...+125	Low Power
	TDA5200	433–435/868–870	–	4	5	–40...+125	Low power
	TDK5210	400–440/810–870	–	100	5	–40...+125	Low power
	TDA5220	400–440/810–870	–	4	5	–40...+125	Low power
Transceiver	TDA5230 <b>NEW</b>	300–320/433–450/865–870	–	20	3...5.5	–40...+105	SmartLEWIS
	TDA5255	433–435	13	100	2.1...5.0	–40...+125	Low power
	TDA5250	868–870	13	64	2.1...5.0	–40...+125	Low power



Function	Part number	Frequency (MHz)	P out (dBm)	Data rate (kbps)	Supply voltage (V)	Temperature (°C)	Other features
Receiver	rRXD0420	300–450	–	80	2.5...5.5	–40...+85	
	rRXD0920	800–930	–	80	2.5...5.5	–40...+85	

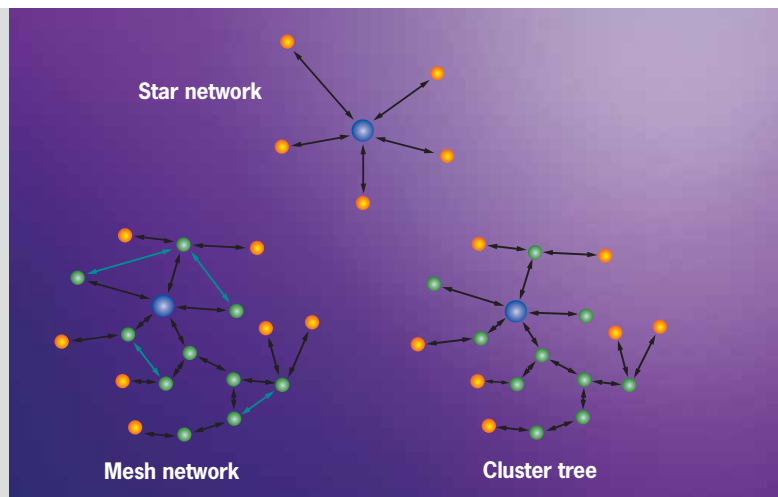
Function	Part number	Frequency (MHz)	P out (dBm)	Data rate (kbps)	Supply voltage (V)	Temperature (°C)	Program Memory bytes
MCU/Transmitter	rfPIC12F675F	380–450	10	40	2.0...5.5	–40...+125	1792
	rfPIC12F675H	850–930	10	40	2.0...5.5	–40...+125	1792

Development/Evaluation kits are available for all products.

## ZigBee™

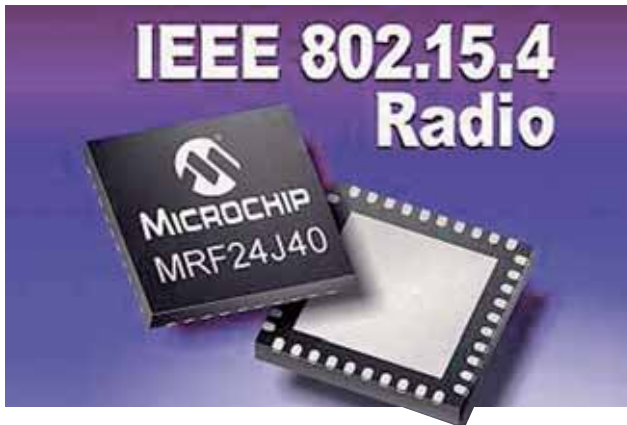
- **Star** networks support a single ZigBee™ coordinator with one or more ZigBee™ End Devices (up to 65,536 in theory)
- **Cluster tree** networks provide for a beaconing multi-hop network
  - Permits battery management of coordinator and routers
  - Must tolerate high latency due to beacon collision avoidance
- **Mesh** network routing permits path formation from any source device to any destination device
  - Radio receivers on coordinator and routers must be on at all times

- ZigBee™ Coordinator (Controller)
- ZigBee™ Full Function Device (Router)
- ZigBee™ Reduced Function Device (End Device)





## ZigBee™



### MRF24J40 2.4 GHz transceiver

#### Complete IEEE 802.15.4 (ZigBee™) solution

- Complete IEEE 802.15.4 radio
- Supports ZigBee™ and MiWi™ protocols
- Simple four-wire SPI interface
- Integrated 20 MHz and 32.768 kHz oscillator drive
- Low current consumption
- Hardware CSMA-CA Mechanism
- Automatic ACK response
- Hardware security engine (AES-128)
- Automatic packet retransmit capable
- Small 40-pin leadless QFN 6 x 6 mm<sup>2</sup> package

### PICDEM Z

The PICDEM Z Demo Kit is designed to demonstrate the Microchip solution for the ZigBee™ protocol by using Microchip's very own MRF24J40 transceiver. Included are two ZigBee nodes – each preprogrammed with demo Coordinator and Reduced Function Device (RFD) applications.

### ZENA™

ZENA™ wireless network analyzer tool uses a simple graphical interface to configure the free Microchip ZigBee™ and MiWi™ protocol stacks. This enables customers to reduce the code size of the stacks by removing optional features; cuts development time by simplifying the interactions with the stacks; and allows customization of the stack to fit a particular need.

### FREE Software Stack (no-cost license and royalty free)

Microchip offers the smallest and only free ZigBee™ Stack, enabling lower development and system costs.

- Zero-cost-license and royalty-free ZigBee™ protocol stack
- Efficient footprint for entire ZigBee™ protocol
- Source-code format, allowing designers to customize their products
- Utilize Microchip's broad portfolio of compatible PIC® microcontrollers

### MiWi™

Microchip also supports a free MiWi™ protocol stack for IEEE 802.15.4 wireless networking ideal for cost-sensitive applications with limited memory. MiWi™ protocol is a free, small footprint protocol developed by Microchip for customers



who do not require ZigBee™ protocol interoperability but want to use IEEE 802.15.4 transceivers in simple low-cost peer-to-peer, star and mesh networks. No certification is required and the protocol stack is provided under a free license when using Microchips microcontrollers and MRF24J40 transceiver.

## Bluetooth™

### F2M01C1

#### Bluetooth™ Serial Port Plug

- Provides transparent RS 232 serial cable replacement
- No need for additional drivers
- Power supplied via D-SUB connector or via DC connector
- Implements the Bluetooth Serial Port Profile and Generic Access Profile
- Interoperability with PDA, laptops etc.
- Nominal range 100 m
- Configurable for use of different baud rates and serial settings
- Easy-to-use Windows configuration software
- Small form factor 48 x 34 x 19



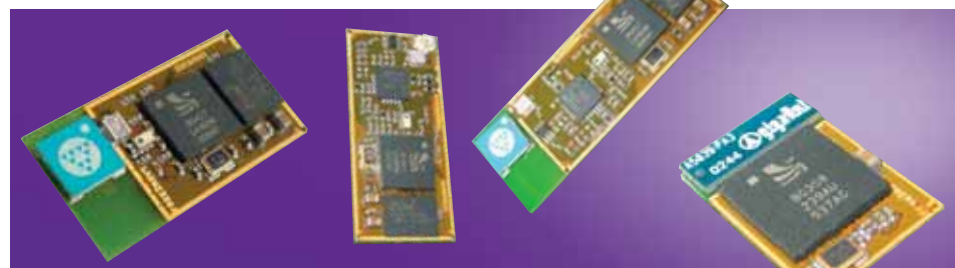
## Bluetooth™ Modules – fully qualified (end-product)



### F2M03AC2

#### Class 2 Audio Module

- Bluetooth 1.1 compliant
- Nominal range 30 m
- 8 GPIOs, 2 8-bit ADCs, voice PCM up to 3 channels simultaneously
- Internal audio codec
- On-board antenna
- Easy-to-use host interface
- Bluetooth end-product qualified
- Small outline 24 x 13 mm



### F2M03GLA

#### General Purpose Low Power

- Bluetooth 2.0 + EDR compliant
- Up to +7 dBm output
- Range 150 m
- Adaptive Frequency Hopping
- Enhanced Data Rate
- 10 GPIOs, 2 8-bit ADCs
- Easy-to-use host interface
- Bluetooth end-product qualified
- On-board antenna
- Small outline

### F2M03GX/GXA

#### General Purpose Extended Range

- Bluetooth 2.0 + EDR compliant
- Up to +19 dBm output
- Range 350 m
- Adaptive Frequency Hopping
- Enhanced Data Rate
- 10 GPIOs, 2 8-bit ADCs
- Easy-to-use host interface
- Bluetooth end-product qualified
- On-board or external antenna
- Small outline

### F2M03MLA

#### Multimedia Low Power

- Bluetooth 2.0 compliant
- Up to +7 dBm output
- Range 150 m
- Adaptive Frequency Hopping
- Integrated High quality stereo codec
- Integrated DSP for support of enhanced audio applications
- On-board antenna
- 12 GPIOs, 3 ADCs
- Bluetooth end-product qualified



## Bluetooth™ Modules – partly qualified (component)



### Bluetooth Specification V1.2 Class 2 (1.0 dBm)

Chipset	CSR BC03
Part number	BTTZ0502SA
Size	6.0 x 6.4 x 1.4 mm
Interface	UART, PCM HCI or RFCOMM
Clock	Ref Clk (26 MHz) Integrated Slow (32,768 kHz) Integrated

### Bluetooth Specification V2.0 + EDR Class 2 (1.0 dBm)

Chipset	CSR BC04
Part number	BTTM46C2SA
Size	6.4 x 5.3 x 1.3 mm
Interface	UART, PCM HCI Stack
Clock	Ref Clk (26 MHz) Integrated Slow (32,768 kHz) Integrated

## Wireless LAN



### Wireless LAN module supporting 802.11b/g

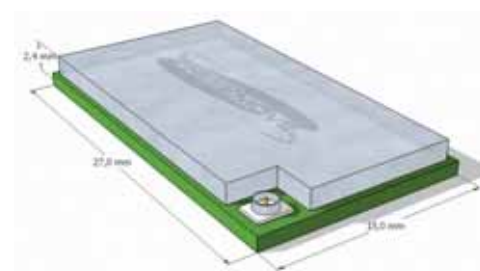
This module is an 802.11b/g device; surface mountable in an automatic mounting line or manually for prototyping. The module supports data rates of up to 56 Mbps (802.11g). The host processor is connected via an SDIO or SPI interface. The module radio characteristics make it suitable in applications where long range is important. The module form factor and antenna connector gives freedom in antenna placement for enhanced performance.

A development kit is made available to customers including a set of modules and support for porting the drivers to a number of platforms.

#### Features

- Dual-mode IEEE 802.11b/g module
- SDIO and SPI host interface
- Low power operation

- Support for IEEE 802.11e EDCA QoS
- Full support for WEP40/64 and WEP104/128; WPA/WPA2 (802.11i) enhanced encryption modes
- Bluetooth Wi-Fi cellular coexistence support via priority and channel signaling schemes
- Support data rates up to 56 Mbps
- Antenna connected via UFL connector on the module
- Receiver Sensitivity -80dBm (estimated)
- Output power 20 dBm (estimated)
- Low power modes
- Surface mountable
- RoHS compliant



## GSM/GPS



### GM862 Modem

- GSM Quad Band
- RoHS Compliant
- On Board SIM Holder

- GPRS Class 10
- Embedded TCP/IP Stack
- PYTHON™ Script Interpreter
- Embedded FTP and SMTP Client
- Extended Temperature Range
- Extended RF Sensitivity



### GM862-GPS Modem

- SiRF Powered
- 20-Channel High Sensitivity GPS Receiver

- GSM Quad Band
- RoHS Compliant
- On Board SIM Holder
- Embedded TCP/IP Stack
- GPRS Class 10
- PYTHON™ Script Interpreter
- Embedded FTP and SMTP Client
- Extended Temperature Range
- Extended RF Sensitivity



### GE863 Embedded

- BGA Package
- GSM Quad Band
- RoHS Compliant

- GPRS Class 10
- Embedded TCP/IP Stack
- PYTHON™ Script Interpreter
- Embedded FTP and SMTP Client
- Extended Temperature Range
- Extended RF Sensitivity



### GE863-GPS Embedded

- SiRF Powered
- BGA Package
- 20-Channel GPS Receiver

- High Sensitivity
- GSM Quad Band
- RoHS Compliant
- Embedded TCP/IP Stack
- GPRS Class 10
- PYTHON™ Script Interpreter
- Embedded FTP and SMTP Client
- Extended Temperature Range
- Extended RF Sensitivity



### GE864 Embedded

- Ultra Compact
- BGA Package
- GSM Quad Band

- RoHS Compliant
- GPRS Class 10
- Embedded TCP/IP Stack
- Embedded FTP and SMTP Client
- PYTHON™ Script Interpreter
- Extended Temperature Range
- Extended RF Sensitivity
- SIM Access Profile
- Serial Port Multiplexer (GSM 07.10)



### GC864 Compact

- Ultra Compact
- GSM Quad Band
- RoHS Compliant

- GPRS Class 10
- Embedded TCP/IP Stack
- Embedded FTP and SMTP Client
- PYTHON™ Script Interpreter
- Extended Temperature Range
- Extended RF Sensitivity
- 80 Pin Board to Board Connector
- Support for SIM Card Holder

## GSM/GPS



### GC864-QUAD-C2

- GSM Quad Band
- RoHS Compliant
- GPRS Class 10

- Embedded TCP/IP Stack
- Embedded FTP and SMTP Client
- Extended Temperature Range
- Extended RF Sensitivity
- 60 Pin Board to Board Connector
- Same size as Sony Ericsson Gx 47



### GT863-PY Terminal

- GSM Quad Band
- RoHS Compliant
- GPRS Class 10

- Embedded TCP/IP Stack
- PYTHON™ Script Interpreter
- Embedded FTP and SMTP Client
- Supply Voltage Range: 9 – 24 V DC
- TCP/IP stack access via AT commands



## CDMA GSM/UMTS/HSDPA/EDGE

SOON  
AVAILABLE



### CC864-DUAL Compact

- Ultra Compact
- Dual Band, CDMA-1XRTT
- RoHS Compliant

- Embedded TCP/IP Stack
- 1xRTT Data up to 153,6 Kbps (full duplex)
- 80 pin Board to Board Connector
- Same form, fit and function as GC864
- Extended Temperature Range
- Extended RF Sensitivity

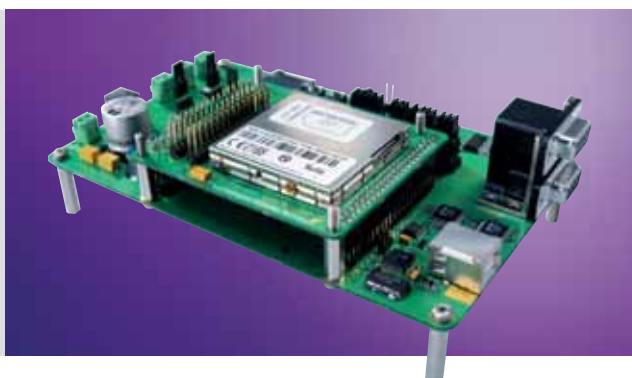
SOON  
AVAILABLE



### UC864 Compact

- Ultra Compact
- Multi Band  
GSM EDGE  
UMTS HSDPA

- HSDPA 7,2 Mbps
- Tripple Band UMTS
- Quad Band GSM
- GPRS Class 10
- EDGE Class 10
- Same form, fit and function as GC864, CC864
- Extended Temperature Range
- Extended RF sensitivity
- RoHS Compliant



### EVK2 Evaluation Kit

The Telit Evaluation Kit EVK2 provides a ready, future-proof and flexible environment for a quick and easy development of applications with Telit's GSM/GPRS Modules families, dramatically reducing the time-to-market.

The kit is formed by a motherboard, on top of which an adapter board with the related module is plugged. This concept allows using it across the boundaries of various form factors and product generations, also in future.

## GSM/GPRS

### Terminal devices

The terminal products are self contained unit's featuring the latest GSM/GPRS technology. The terminal products are excellent for system integrators who focus on application development by using a ready to start modem with standard connectors.

### Common Features

- Quad Band
- RS232 serial port
- GPRS Class 10
- TCP/IP stack
- Multiple sockets with listening / server capability
- SMS and CSD
- I/O ports
- 3 status LEDs
- Integrated SIM card holder
- 5-36 V DC supply
- 30°C to +75°C
- CC approval
- CE approval
- E-marking
- RoHS compliant

### GS64 Terminal

- Wavecom GS64 based
- Audio support
- (see Common features)

### GT64 Terminal

- Wavecom GS64 based
- Embedded applications using M2m Power tools
- 5 inputs / 1 output
- (see Common features)

### GT864-QUAD Terminal

- Telit GC864-QUAD based
- FTP support
- Email support
- SMTP
- Audio – Microphone / Loudspeaker (USB mini connector)
- Jamming detection and report
- SIM access profile
- (see Common features)

### GT864-PY Terminal

- Embedded applications using Python script language
- Telit GC864-PY based
- FTP support
- Email support
- SMTP
- Jamming detection and report
- 4 digital inputs, 1 analogue input and 1 digital output
- SIM access profile
- (see Common features)

### Telemetry device STD32

- Stand alone telemetry device
- 2 digital control outputs (6 A at max 250 V)
- 2 digital inputs (optocoupled 12 V)
- Bidirectional communication possible to control the outputs and retrieve status information from the inputs
- Power supply voltage 5-32 V
- Status-LEDs for inputs and outputs as well as for GSM network
- Ready to use due to standard configuration (only one phone call with a mobile needed)
- Expert configuration allows setting of individual parameters
- CE approval
- E-Marking



## GPS



PRE-LIMINARY

### iTrax310

- Ultra small form factor:  
13.1 x 15.9 x 2.5 mm
- SiRFStarIII low power based (GSC3f/LP)
- 20 channels (12 in tracking)
- Very high sensitivity:  
-142 dBm (Acquisition)  
-158 dBm (Navigation)
- NMEA or SiRF binary protocol
- NMEA default output:  
GGA, RMC, GSV, GSA (9600 baud)
- 110mW@3.0V  
(45uW@3.0V in back up state)
- Support for passive and active antennas
- 1 PPS output




### iTrax MP Family Key Features

- iTrax300, iTrax130 and iTrax03-S
- Tiny form factor:  
16.2 mm x 18.8 mm x 2.3 mm
- High sensitivity
- Low power
- Common connectivity
- NMEA & binary protocols
- Two serial ports
- 1PPS output
- GPIO available for custom purposes
- Other peripherals include SPI bus, MMC bus, Capture Timer input, Pulse Measurement input, A/D converter depending on the module

		iTrax300	iTrax130	iTrax03-S
General:	L1, C/A Code, SPS	20 channels	12 channels	12 channels
Update rate:	1 fx/s (User config.)	1 fx/s (User config.)	1 fx/s (User config.)	
Accuracy:	Position: Velocity: Time:	1.5 m (CEP50) 1.8 m (CEP95) 0.1 m/s ±1 µs	1.5 (CEP50) 1.8 m (CEP95) 0.1 m/s 20 ns RMS	1.0 m (CEP50) 1.2 m (CEP95) 0.1 m/s RMS 20 ns RMS
TIFF:	Cold Start: Hot start:	40s typ. 2s typ.	39x typ. 4s typ.	40s typ. 4s typ.
Sensitivity:	Acquisition (cold): Navigation: Tracking:	- 143 dBm - 158 dBm - 158 dBm	- 139 dBm - 151 dBm - 154 dBm	- 141 dBm - 155 dBm - 156 dBm
Power Drain:	Navigating 1 fx/s: Stand-by state: Hibernate/Sleep state:	110 mW typ. 3 mW typ. 45 µW	100 mW typ. 15 mW typ. 150 mW batt. backup	100 mW typ. 95 mW typ.
Operating voltage:	Main Supply: Back up Supply: RF Supply:	+3.0 V...3.3 V +2.5 V...3.3 V -	+3.0 V...3.6 V +3.0 V...3.6 V -	+2.7 V...3.3 V - +2.7 V...3.3 V
Other:	Operating temperature: Serial ports: GPIO, number of: Peripherals: Chip set:	-40 °C... +85 °C 2 7 free, 1 dedicated - SiRFStarIII GSC3-LP	-40 °C... +85 °C 2 12 (shared functionality) 10-bit A/D, 2 channels Sony CXD2985	-40 °C... +85 °C 2 17 (shared functionality) SPI, MMC, Timer, PM uNav uN8021 + uN2110

## GPS



### OEM GPS receivers with integrated patch antenna

#### uPatch100-S

- Small form factor – 22 x 22 x 8 mm
- OEM module with built-in antenna
- 18 x 18 x 4 mm patch antenna
- Power supply 3.0...3.6 V
- Battery backup supply 2.5 V...3.6 V
- Low power consumption:
  - 44 mA @ 3.3 V (normal mode)
  - 10 uA @ 3.3 V (battery backup)
- Very high sensitivity:
  - 139 dBm (Unaided Acquisition)
  - 150 dBm (Navigation)
  - 152 dBm (Tracking)
- NMEA0183 and Sony ASCII protocols
  - TXD0: NMEA OUTPUT
  - RXD0: SONY ASCII INPUT
- Accurate 1PPS timing output
- WAAS/EGNOS compatible
- Cold Start TTFF: 45 s
- Based on SONY receiver architecture CXD2951-GL4 Single Chip



### uPatch102

- Small form factor – 28 x 28 x 7.4 mm
- Low power consumption:
  - 44 mA @ 3.3 V (normal mode)
  - 150 uA @ 3.3 V (battery backup)
- Very high sensitivity:
  - 139 dBm (Unaided Acquisition)
  - 150 dBm (Navigation)
  - 152 dBm (Tracking)
- NMEA0183 and Sony ASCII protocols
- Integr. 25 x 25 x 4 mm patch antenna
- Accurate 1PPS timing output
- Cold Start TTFF: 38 s
- Battery backup for low power modes
- Based on Sony receiver architecture
- CXD2951-GL4 single chip LSI
- Two receiver options:
  - uPatch102-R (RS232)
  - uPatch102-C (CMOS)
- Default NMEA messages @ baud rates:
  - 4800: GGA, GSA, GSV, RMC
  - 9600: GA, GSA, GSV, VTG, ZDA, PSGSA

### uPatch130

- uPatch MP form factor, 19 x 27 x 7 mm
- single chip LSI based (CXD2985GL)
- Very high sensitivity:
  - -141 dBm (Acquisition)
  - -154 dBm (Navigation)
- NMEA or iTalk Binary protocol
- 12 channels
- 145mW@3,0V (45uW@ 3,0V in back up state)
- Internal or external antenna (autoswitch)
- Integrated 18x18x4mm patch antenna
- 1 PPS output
- Hirose RF connector for external antenna
- 8-pin SMD interface connector

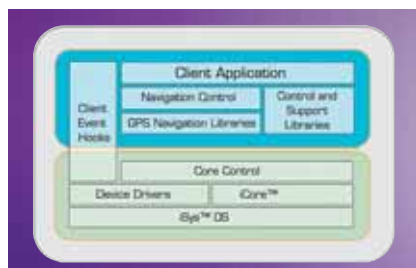


### Patch300

- uPatch MP form factor, 19x27x7 mm
- SiRFStarIII low power based (GSC3/LP)
- Very high sensitivity:
  - -142 dBm (Acquisition)
  - -158 dBm (Navigation)
- 20 channels (12 in tracking)
- NMEA protocol
- 20mW@3,0V (45uW@ 3,0V in back up state)
- Internal or external antenna (autoswitch)
- Integrated 18x18x4mm patch antenna
- 1 PPS output
- Hirose RF connector for external antenna
- 8-pin SMD interface connector

### Developers Kit

iTrax03 family · iTrax100 family · iSuite/SDK



## GPS



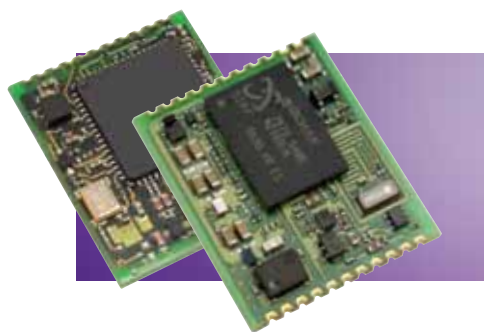
### Positioning Receiver Portfolio

With the mission to support our customer to implement GPS functionality into their systems, Tyco Electronics is offering a large product portfolio to cover almost all integration possibilities in an easy way. All GPS products are manufactured in our ISO 9001 and TSI 6949 certified factory inside the EU.

Beyond that our modules follow RoHS standard and are 100 % electrically and functionally tested prior packaging. This way we constantly guarantee high quality products.

- Standard firmware: revision 1xx
- Standard firmware: revision 2xx
- With custom firmware support

	A1037-A	A1029-A/C	A1030-A	A1035-C	A1080-A
1 PPS	●	●	●	●	●
Antenna active	●	●	●	●	●
Antenna passive	●	●	●	●	●
Antenna patch onboard	●	●	●	●	●
Antenna status detection	●	●	●	●	●
Assisted GPS	●	●	●	●	●
Connection plug-in	●	●	●	●	●
Connection solderable	●	●	●	●	●
Data logging	●	●	●	●	●
Dead reckoning	●	●	●	●	●
Differential GPS RTCM input	●	●	●	●	●
Flash, programmable	●	●	●	●	●
GPIO	●	●	●	●	●
GPS/UTC raw data	●	●	●	●	●
I2C interface	●	●	●	●	●
Memory free flash (byte)	●	●	●	●	●
Memory free SRAM (byte)	●	●	●	●	●
Processor:	●	●	●	●	●
Available power	●	●	●	●	●
ROM	●	●	●	●	●
SBAS support	●	●	●	●	●
SPI interface	●	●	●	●	●
TCXO	●	●	●	●	●
UART NMEA	●	●	●	●	●
USB interface	●	●	●	●	●
UTM projection	●	●	●	●	●



#### A1037-A (Low cost)

- Highly sensitive: -153 dBm tracking
- Accurate positioning: 3 m CEP
- Cold start TTFF (Time To First Fix): < 60 s
- Very small footprint: 19 x 16 mm
- Ultra-low power consumption: 55 mA during acquisition (typical)
- SBAS support
- A-GPS support

#### A1080-A (High performance)

- Bench marking sensitivity: -159 dBm tracking
- Cold start TTFF (Time To First Fix): < 35 s
- Very small footprint: 19 x 16 mm
- Ultra-low power consumption: Max. 50 mA during acquisition
- A-GPS support
- SBAS support

### Evaluation Kits

USB



EVA



DKS



DR



## Accessories

### Mobile Communication- & Telematics-Antennas from Hirschmann

- |                    |            |
|--------------------|------------|
| ■ GPS              | ■ ORBCOMM  |
| ■ GSM/Celluar      | ■ Cables   |
| ■ WLAN & BLUETOOTH | ■ Adapters |
| ■ TETRA            |            |

#### GPS 7 M

##### GPS

- |                                     |                            |
|-------------------------------------|----------------------------|
| ■ Magnetic surface mount antenna    | ■ Cable: RG 174, L=3000 mm |
| ■ Dimensions: 39 x 39 x 14 mm       | ■ Connector:               |
| ■ Voltage Supply: 3 - 5.5 VDC       | - 001: MCX male            |
| ■ Gain: 2 dBic                      | - 002: SMB female          |
| ■ Amplifications: 26 dB ± 2 dB typ. | - 003: SMA male            |
|                                     | - 004: FAKRA female        |
|                                     | Code C                     |



#### GPS 1890

##### GPS, AMPS GSM 900/1800/1900

- |  |                                |
|--|--------------------------------|
| ■ For navigation, traffic telematics or fleet management     | ■ Voltage Supply: 3 - 5.5 VDC  |
| ■ Easy mounting by adhesive or magnetic pad                  | ■ Gain: 2 dBic                 |
| ■ Mounting on various surfaces (glass, plastic, metal, etc.) | ■ Amplifications: 27 dB ± 2 dB |
| ■ Dimensions: 100 x 66 x 19 mm                               |                                |

##### GPS:



##### AMPS

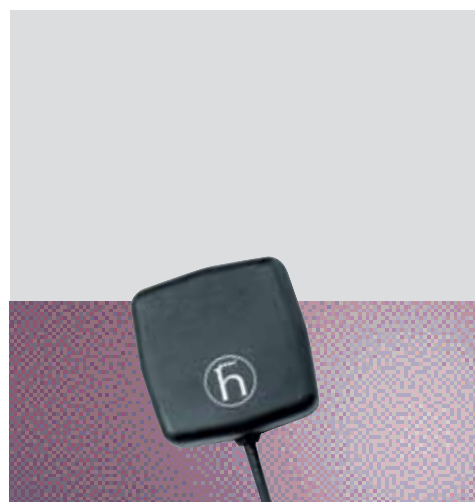
##### GSM 900/1800/1900 UMTS

- Gain: 0 dBi

#### MCA 18 90 MH

##### AMPS, GSM 900/1800/1900, UMTS

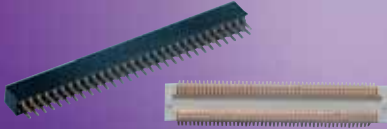
- |  |                            |
|--|----------------------------|
| ■ Easy interior windscreen mounting, self-adhesive | ■ Gain: 0 dB               |
| ■ Doesn't interfere the car design                 | ■ Cable: RG 174, L=2500 mm |
| ■ Dimensions: x 57 mm                              | ■ Connector: FME female    |



This is only a short extract from the HIRSCHMANN portfolio.  
 Rutronik offers the complete range of antennas & accessories.

full  
availability

## Further Accessories

Rutronik number	Product type	Suitable for	Description
			

### System Connectors

WIREAC1013	System connector	GC864-QUAD-C2	60P Female Header SMT 1.27 mm
WIREAC1014	System connector	GC864-QUAD-C2	60P Female Header hole m. 1.27 mm
COREC19998	System connector	GSM (GM862)	50P Female Header SMT
COREC21477	System connector	GSM (GC864)	80P Female Header SMT

### SIM Card Holders

WIREAC1009	Simcard holder	GSM	6P spring-ejection mechanism with lock and sim card detection
WIREAC1015	Simcard holder	GSM	6P spring-ejection mechanism and sim card detection
WIREAC1039	Simcard holder	GSM	6P with cover and sim card detection
WIREAC1040	Simcard holder	GSM	6P with cover and sim card detection (side connected)
WIREAC1078	Simcard holder	GSM	6P spring-ejection mechanism and simcard detection

### Adapter Cables

WIREAC1033	Adapter cable	GSM	MMCX male R/A to SMA/f bulkhead, 100 mm
WIREAC1036	Adapter cable	GSM	MMCX male R/A to SMA/f bulkhead, 150 mm
WIREAC1079	Adapter cable	GC864-QUAD	GSC to SMA/f bulkhead, 100 mm

### Antennas

WIREAC1025	Antenna	GPS	Magnetic antenna, 5 m cable, SMA male
WIREAC1027	Antenna	GSM	Glass antenna, T-shape, 3 m cable, SMA male, 900/1800 MHz
WIREAC1028	Antenna	GSM	Glass antenna, I-shape, 3 m cable, SMA male, 900/1800 MHz
WIREAC1026	Antenna	GSM	Hole mounted antenna, 3 m cable, SMA male, 900/1800 MHz
WIREAC1029	Antenna	GSM	Magnetic antenna, 3 m cable, SMA male, 900/1800 MHz
WIREAC1031	Antenna	GSM	Stub antenna, straight, 56 mm, SMA male, 900/1800 MHz
WIREAC1032	Antenna	GSM	Stub antenna, angled, 54 mm, SMA male, 900/1800 MHz
WIREAC1035	Antenna	GSM	Swivel antenna, 104 mm, SMA male, 900/1800 MHz
WIREAC1004	Antenna	GSM	PCB antenna, MMCX male R/A, 900/1800/1900MHz

Antennas and adapter cables are also available with other types of connectors

## Intelligent Distribution



### Semiconductors

- Discrete Semiconductors
- Analog ICs
- Digital ICs
- Optoelectronic Components



### Passive Components

- Capacitors
- Resistors
- Inductors, Ferrites & Piezoelectronic Components



### Electromechanical Components

- Batteries
- Thermo Management
- Relays
- Connectors & Cable Systems
- Fuses
- Switches



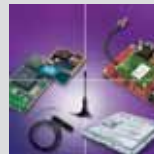
### Storage Components

- Memory Modules
- Memory Cards
- Flash Drives
- Hard Disc Drives
- Floppy Drives
- CD Drives
- DVD Drives
- Motherboards



### Displays & Embedded Boards

- Digital TFT Panels
- Smart Panels incl. Controller
- Special TFT Applications
- Character/Graphic Controller
- Embedded Computers
- Industrial Motherboards
- Touch-Screen Panels & Controller
- Display Accessories
- Passive LC-Displays
- OLEDs



### Wireless Components

- Bluetooth
- GSM
- GPS
- ISM / SRD radio
- RFID
- ZigBee™
- WLAN
- Accessories



### Technical Solutions

- Development Center (FAEs)
- Product Center



### Logistical Solutions

- Logistics Center
- Solutions
- Modules



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